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Reply to Final Office Action of June 2, 2003

REMARKS

Claim 23 has been canceled, and therefore claims 1 to 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31 to 38, and 40 to 54 are now pending.

Applicants respectfully request reconsideration of the present application in view of this response.

With respect to paragraph three (3) of the Final Office Action, Applicants thank the Examiner for allowing claims 3 and 33.

With respect to paragraph six (6), claim 23 was apparently rejected for lack of antecedent basis under the second paragraph of Section 112, since claim 23 depended from previously canceled claim 11. To facilitate matters, claim 23 has been canceled.

With respect to paragraph eight (8), claims 1, 24 and 31 were rejected under 35 U.S.C. § 102(e) as anticipated by Xu et al., U.S. Patent No. 6,363,163.

As regards the anticipation rejection of the claims, to reject a claim under 35 U.S.C. § 102(b), the Office must demonstrate that each and every claim limitation is contained in a single prior art reference. (*See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). As explained herein, it is respectfully submitted that the Final Office Action does not meet this standard, for example, as to the features of the claims 1, 24 and 31, as explained herein.

Still further, not only must each of the claim limitations be identically described, an anticipatory reference must also enable a person having ordinary skill in the art to practice the claimed invention, namely the claimed subject matter of the claims, as discussed above. (*See Akzo, N.V. v. U.S.I.T.C.*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986)). In particular, it is respectfully submitted that, at least for the reasons discussed herein, the reference relied upon would not enable a person having ordinary skill in the art to practice the subject matter of the claims as presented.

As further regards the anticipation rejections, to the extent that the Office Action relies on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Examiner must provide a “basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics *necessarily* flows from the teachings of the applied art.” (*See* M.P.E.P. § 2112; emphasis in original; and *see Ex parte Levy*, 17

U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int'f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic. Accordingly, it is respectfully submitted that any anticipation rejection premised on the inherency doctrine must fail absent the foregoing conditions.

The Xu reference purportedly concerns a method to obtain a subtracted section image between current and previous sections, in which section correspondence between the two scans is determined by using curves of relative lung area of the two scans (Fig. 3, column 6, lines 27-52). More particularly, the average section number of each curve is calculated by summing each weighted section number with its corresponding value of the relative lung area. The difference in the average section number between the two scans indicates the overall shifts in the scanning direction (Z-axis) between the two scans. After that, the mid-section and several adjacent sections are selected from the previous scan for comparison, one-by-one, with the mid-section from the current scan to find a pair of the best-matched section images in the two scans (column 6, lines 53-67). After the best-matched section pair is determined, the relative shifts in the vertical and horizontal directions between the previous section image and the corresponding current section image is determined, then, the previous section image is subtracted from the current section image (columns 7 and 8).

The Final Office Action essentially asserts that Figures 2A-2B, 4A-4F and 6A-6C of Xu are analogous to Figures 1A-2C of the present application. However, the Figures of the Xu reference are merely section images that are "slice" images. In stark contrast, Figures 2B and 2C of the present application are projection images calculated from slice images -- as reflected in the claimed subject matter. In the specification, the description at page 23, line 24 to page 24, line 28 describes the calculation method. That is, a projected line (parallel to the X axis) is calculated by adding pixel density values of a slice image (in the XY plane) in the Y axial direction. This calculation is performed for each slice image by using the equation (1) (page 23, line 37) to generate a plurality of lines (parallel to the X axis) on the XZ plane. Then, the projection image on the XZ plane is generating by using a linear interpolation method from the discrete lines. Accordingly, the Xu reference does not identically describe (or even suggest) anything concerning the use of "projections" as recited

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in the context of the claims, and as defined and understood in view of the specification.

Thus, in contrast, with the claimed subject matter of each of claims 1, 24 and 31, a shift amount in the Z-axis direction is measured by using first and second (for example, current and previous) projection images, in which the direction of the projection is perpendicular to the Z-axis (that is, a direction in the X-axis or the Y-axis). Page 20 of the specification and Figs. 1A-2C explain this claim feature. By using the *projection* images of the tomographic slice images, shifts in the Z-axis direction may be determined automatically by performing two-dimensional image comparison by using the template, as provided for in the context of each of claim 1, 24 and 31.

Unlike the system of the Xu reference, it is not necessary to use relative lung area values and it is not necessary to compare slice images one-by-one (this is three-dimensional comparison). The Xu reference may apparently refer to a method of two-dimensional comparison in columns 7 and 8, but this involves comparing two section images, so that this reference does not identically describe (or even suggest) the subject matter of claims 1, 24 or 31, which involves comparing two projection images -- and not section images -- for measuring shifts in the Z-axis direction.

Thus, the Xu reference does not identically describe (or even suggest) anything concerning the use of "projections" as provided for in the context of each of claims 1, 24 and 31. Although the Office Action asserts that the claim 1 feature of "generating a first projection image" corresponds to the reference to "images reconstructed from the two data sets" (column 5, lines 1-7) in the Xu reference, this "reconstruction" merely refers to reconstructing scan image from image data, and is completely different from a "projection" in a "direction perpendicular to Z-axis", as in the claims 1, 24 and 31.

Since the Xu reference does not identically describe (or even suggest) "projection in the direction perpendicular to Z-axis" for measuring shifts as provided for in the context of the claims 1, 24 and 31, it is respectfully submitted that these claims are simply not anticipated by the Xu reference. It is therefore respectfully submitted that claims 1, 24 and 31 are allowable (as are each of their dependent claims).

With respect to paragraph ten (10), claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et

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al., U.S. Patent No. 6,363,163, in view of Some et al., U.S. Patent No. 5,841,148.

As explained above, the primary Xu reference does not describe or suggest the use of a “projection in the direction perpendicular to Z-axis” for measuring shifts (to obtain a pair of the best-matched section images in the two scans). It is therefore respectfully submitted that each of the independent claims are not obvious in view of the Xu reference for essentially the same reasons that claims 1, 24 and 31 are not suggested, as referred to above, since the secondary Some reference does not cure the critical deficiencies of the primary Xu reference. In this regard, the Office Action only relies on Some for other features and not for the features discussed above that plainly distinguish the Xu reference. It is therefore respectfully submitted that all of the independent claims (and their respective dependent claims) are allowable for essentially the same reasons as claims 1, 24 and 31.

With respect to paragraph eleven (11), claims 7, 8, 12, 35, 36 and 40 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Moshfeghi, U.S. Patent No. 5,368,033.

As explained above, the primary Xu reference does not describe or suggest the use of a “projection in the direction perpendicular to Z-axis” for measuring shifts (to obtain a pair of the best-matched section images in the two scans). It is therefore respectfully submitted that each of the independent claims are not obvious in view of the Xu reference for essentially the same reasons that claims 1, 24 and 31 are not suggested, as referred to above, since the secondary Some reference and the third-level Moshfeghi reference do not cure the critical deficiencies of the primary Xu reference. In this regard, the Office Action only relies on Some and Moshfeghi for other features and not for the features discussed above that plainly distinguish the Xu reference. The Moshfeghi reference refers to a projection image for showing vessel overlap and thickness, but it is believed and respectfully submitted that any review of that reference makes plain that it does not describe or suggest using projection images for measuring shifts between current and previous 3D images, for example. It is therefore respectfully submitted that all of the independent claims (and their respective dependent claims) are allowable for essentially the same reasons as claims 1, 24 and 31.

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With respect to paragraph twelve (12), claims 9, 22, 23 and 37 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Jang et al., U.S. Patent No. 5,862,249.

Claims 9, 22, and 37 respectively depend from claims 6, 10, and 34 which are not identically described or suggested by the primary or secondary references, and are therefore allowable for the same reasons as their respective base claims, since the third level “Jang” reference does not cure the critical deficiencies of the primary and secondary references. Claim 23 has been canceled to facilitate matters, as explained above. Accordingly, it is respectfully requested that the obviousness rejections be withdrawn.

With respect to paragraph thirteen (13), claims 13 to 15, 20, 21, 41 to 43, 48 and 49 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Kano et al., U.S. Patent No. 5,359,513.

Claims 13, 14, 15, 20, 21, 41, 42, 43, 48 and 49 respectively depend from claims 10, 10, 10, 6, 10, 38, 38, 38, 34 and 38 which are not identically described or suggested by the primary or secondary references, and are therefore allowable for the same reasons as their respective base claims, since the third level “Kano” reference does not cure the critical deficiencies of the primary and secondary references. Accordingly, it is respectfully requested that the obviousness rejections be withdrawn.

As further regards all of the above obviousness rejections, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must describe or suggest each claim element and it must also provide a motivation or suggestion for combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). Thus, the “problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem”, Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998). The references relied upon simply do not address the problems (referred to in the present

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application) that are met by the subject matter of any of the rejected claims.

The cases of In re Fine, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988), and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), also make plain that the Office Action's assertions that it would have been obvious to modify the reference relied upon does not properly support a § 103 rejection. It is respectfully suggested that those cases make plain that the Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . **One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1600 (citations omitted; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943 & 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Office Action reflects hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not even the case here, there still must be some finding as to the "specific understanding or principle within the

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knowledge of a skilled artisan” that would motivate a person having no knowledge of the claimed subject matter to “make the combination in the manner claimed”, stating that:

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. *With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed.* In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

(See In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Federal Circuit 2000) (italics added)). Here again, it is believed that there have been no such findings to establish that the features discussed above of the rejected claims are met by the reference relied upon. As referred to above, any review of the reference relied upon makes plain that it simply does not describe the features discussed above of the claims as now presented.

More recent still, in the case of *In re Lee*, 61 U.S.P.Q.2d 1430, 1433-35 (Fed. Cir. 2002), the Court reversed the Board of Appeals for relying on conclusory statements, stating the following:

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that “the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software” and that “another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial” do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to “[use] that which the inventor taught against its

teacher.” Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

....

In its decision on Lee's patent application, the Board rejected the need for “any specific hint or suggestion in a particular reference” to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

[The] “common knowledge and common sense” on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. [The] Board's findings must extend to all material facts and must be documented on the record, lest the “haze of so-called expertise” acquire insulation from accountability. “Common knowledge and common sense,” even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.

Thus, the proper evidence of obviousness must show why there is a suggestion to combine the references so as to provide the subject matter of the claims and its benefits.

As further regards all of the obviousness rejections of the claims, it is respectfully submitted that not even a *prima facie* case has been made in the present case for obviousness, since the Office Actions to date never made any findings, such as, for example, regarding in any way whatsoever what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See In re Rouffet, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the “factual predicates underlying” a *prima facie* “obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art”)). It is respectfully submitted that the proper test for showing obviousness is what the “combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art”, and that the Patent Office must provide particular findings in this regard -- the evidence for

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which does not include “broad conclusory statements standing alone”. (See *In re Kotzab*, 55 U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made “concerning the identification of the relevant art”, the “level of ordinary skill in the art” or “the nature of the problem to be solved”))). It is respectfully submitted that there has been no such showings by the Office Actions to date or by the Advisory Action.

In fact, the present lack of any of the required factual findings forces both Appellants and this Board to resort to unwarranted speculation to ascertain exactly what facts underly the present obviousness rejections. The law mandates that the allocation of the proof burdens requires that the Patent Office provide the factual basis for rejecting a patent application under 35 U.S.C. § 103. (See *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967))). In short, the Examiner bears the initial burden of presenting a proper prima facie unpatentability case -- which has not been met in the present case. (See *In re Oetiker*, 977 F.2d 1443, 1445, 24, U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)).

Further still, as regards the references relied upon with respect to those claims having means-plus-function language, it is respectfully submitted that it likewise does not describe or even suggest, for example, means for performing at least the recited functions of the claims as discussed above. (See M.P.E.P. §§ 2181 to 2184). In particular, M.P.E.P. § 2182 specifically states that both before and after In re Donaldson Co., 16 F.3d 1189, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994), applying a reference to a means-plus-function limitation “requires that the [referenced] element perform the *identical function* specified in the claim”, and if that reference teaches identity of function -- which it does not, as essentially explained above with respect to the claims, then an examiner carries the initial burden of proof for showing that the prior art structure is the same as or equivalent to the “structure, material or acts” described in the specification that correspond to the claimed means. (See M.P.E.P. § 2182). Even if the references relied upon did describe the functions of all of the means recited in the claims -- which it does not at least as to the means discussed above, an examiner must still meet his initial proof burden by showing that each of the referenced structures is the same as or equivalent to the structures (and not the functions) described in the specification

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corresponding to each of the claimed means. (See M.P.E.P. § 2182 and above).

In summary, it is respectfully submitted that claims 1 to 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31 to 38, and 40 to 54 are allowable at least for the foregoing reasons.

CONCLUSION

In view of all of the above, it is believed that the rejections have been obviated, and that claims 1 to 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31 to 38, and 40 to 54 are allowable. It is therefore respectfully requested that the rejections be reconsidered and withdrawn, and that the present application issue as early as possible.

Dated: _____

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